

CLAIMS

1. Method for controlling a plurality of manipulators with a large number of control units associated with the manipulators, so that each control unit controls at least one manipulator, wherein an operating device accesses several control units for controlling the manipulators.
2. Method according to claim 1, wherein the operating device generates control signals directly suitable for a movement control of the particular manipulators (movement-relevant control signals).
3. Method according to claim 2, wherein the movement-relevant control signals are directed by means of a first transmitting device to an area of the associated control unit, which is constructed for the real time processing of movement-relevant control signals.
4. Method according to claim 1, wherein the operating device generates further, not directly movement-relevant control signals.
5. Method according to claim 4, wherein the further signals are exclusively directed to a terminal device present in a non-real time area of a control unit for the display of operating surfaces of different control units.
6. Method according to claim 2, wherein the control signals are directed via a second transmitting device to an area of the associated control unit constructed for processing data in non-real time.

7. Method according to claim 1, wherein the operating device displays the operating surface of the control unit of the selected manipulator.
8. Method according to claim 7, wherein there is a graphic display.
9. Method according to claim 8, wherein a designation of the manipulators is displayed on the operating device for identifying selected manipulators.
10. Method according to claim 8, wherein for identifying the selected manipulators an optically acting marking present on the particular manipulator is displayed on the operating device.
11. Method according to claim 8, wherein for identifying the selected manipulators, an acoustic and/or optical signal generator present on the particular manipulator is activated.
12. Method according to claim 8, wherein image contents of the control unit associated with the selected manipulators are digitally transmitted to the operating device.
13. Method according to claim 12, wherein image contents data are compressed prior to transmission.
14. Method according to claim 12, wherein standard image elements are transmitted as control instructions and independently displayed by the operating device.
15. Method according to claim 8, wherein image information is transmitted as pixel data.

16. Method according to claim 2, wherein the transmission of movement-relevant signals via the first transmitting device is controlled by a first monitoring device and in the case of an interruption of transmission a movement-relevant control signal is generated by said monitoring device.

17. Method according to claim 7, wherein the image information data and control signals generated by the operating device are transmitted through a same channel.

18. Method according to claim 7, wherein the image information data and control signals generated by the operating device are transmitted on different channels, a function and target of the channels being controlled by a second, opposite monitoring device.

19. Method according to claim 1, wherein the manipulator linked by means of the selected control unit with the operating device is indicated by an optical and/or acoustic signal generator.

20. Method according to claim 19, wherein the operability of the signal generator is monitored by a monitoring device.

21. Device for controlling a plurality of manipulators, having a plurality of control units associated with the manipulators, so that each control unit controls at least one manipulator, wherein a common operating device connectable with at least one specific control unit for operating the manipulators .

22. Device according to claim 21, wherein the control units are in each case subdivided into areas (RT and NRT) set up

for implementing a real time and a non-real time operating system.

23. Device according to claim 22, wherein the real time areas (RT) of the control units are constructed for the processing of control signals (movement-relevant control signals) directly suitable for the movement control of the particular manipulators.

24. Device according to claim 23, wherein the real time areas (RT) of the control units are connected by means of a first transmitting device and the non-real time areas (NRT) of the control units are connected by means of a second transmitting device.

25. Device according to claim 21, wherein at least one control unit has in its non-real time area (NRT) a terminal device for displaying operating surfaces (BOF) of different control units.

26. Device according to claim 21, wherein at least one control unit has a detecting device for detecting a control unit controlling the selected manipulators.

27. Device according to claim 26, wherein the control unit having the detecting device has a path control device on which action can take place through the detecting device, so that the movement-relevant control signals can be directed via the first transmitting device to the control unit associated with the selected manipulators.

28. Device according to claim 27, wherein the movement-relevant control signals can be directed to the terminal device in parallel to a transmission to the associated control unit.

29. Device according to claim 25, wherein further, not directly movement-relevant control signals generated by the operating device can be directed exclusively to the terminal device.

30. Device according to claim 25, wherein all the control signals between the terminal device and an operating surface (BOF) can be communicated to the associated control unit by means of the second transmitting device.

31. Device according to claim 21, wherein the operating device has a display device for displaying operating surfaces (BOF) of different control units.

32. Device according to claim 31, wherein the operating device is constructed for visualizing operating surfaces (BOF) of different control units.

33. Device according to claim 31, wherein on the operating device is in each case displayed the operating surfaces (BOF) of the associated control unit.

34. Device according to claim 21, wherein display, control and/or safety signals can be transmitted on a bus/data channel.

35. Device according to claim 31, wherein display and control signals between the control units and the operating device can be transmitted on a common data channel.

36. Device according to claim 31, wherein display and control signals between the control units and the operating device can be transmitted on separate data channels.

37. Device according to claim 36, wherein an opposite monitoring device constructed for monitoring a function and a target of the data channels.

38. Device according to claim 31, wherein a clear association between the displayed operating surface (BOF) and the selected manipulator.

39. Device according to claim 31, wherein the operating surface (BOF) and manipulator have substantially identical, optically acting markings (M_1 , M_2 , M_3).

40. Device according to claim 38, wherein the manipulators in each case have optical and/or acoustic signal generators (S), which are in each case constructed for transmitting a signal for the display of a selected manipulator .

41. Device according to claim 21, wherein a safety transmitting device interconnecting the control units of all the manipulators .

42. Device according to claim 21, wherein control signals generated by the operating device can only be directed following verification to the associated control unit.

43. Device according to claim 42, wherein optical and/or acoustic signal generators (S) located on the manipulators and which are constructed for displaying a given link, between the operating device and the manipulator.

44. Device according to claim 43, wherein a monitoring device for monitoring the operability of the signal generator.